Lab 5

Determination the Concentration Of Phosphoric Acid (H_3PO_4)

❖ **Principle :-**

- **Sep 1:-**

$H_3PO_4 + NaOH \longrightarrow NaH_2PO_4 + H_2O$

at PH=(3-5) acid so using M.O

- **Sep 2 :-**

$NaH_2PO_4 + NaOH \longrightarrow NaHPO_4 + H_2O$

at PH= (7-9) base so using Ph.Ph

- **Sep 3 :-**

$NaHPO_4 + NaOH \longrightarrow Na_3PO_4 + H_2O$

at PH=(12-13)

NOTS:-

1. At Frist equivalent point using M.O as indicator at PH==(3-5)

$V_{NaOH} = 1/3\ H_3PO_4$

at the end point the color change from red to orange

2. At second equivalent point using Ph. Ph indicator at Ph = (7-9)

$V_{NaOH} = 2/3\ H_3PO_4$

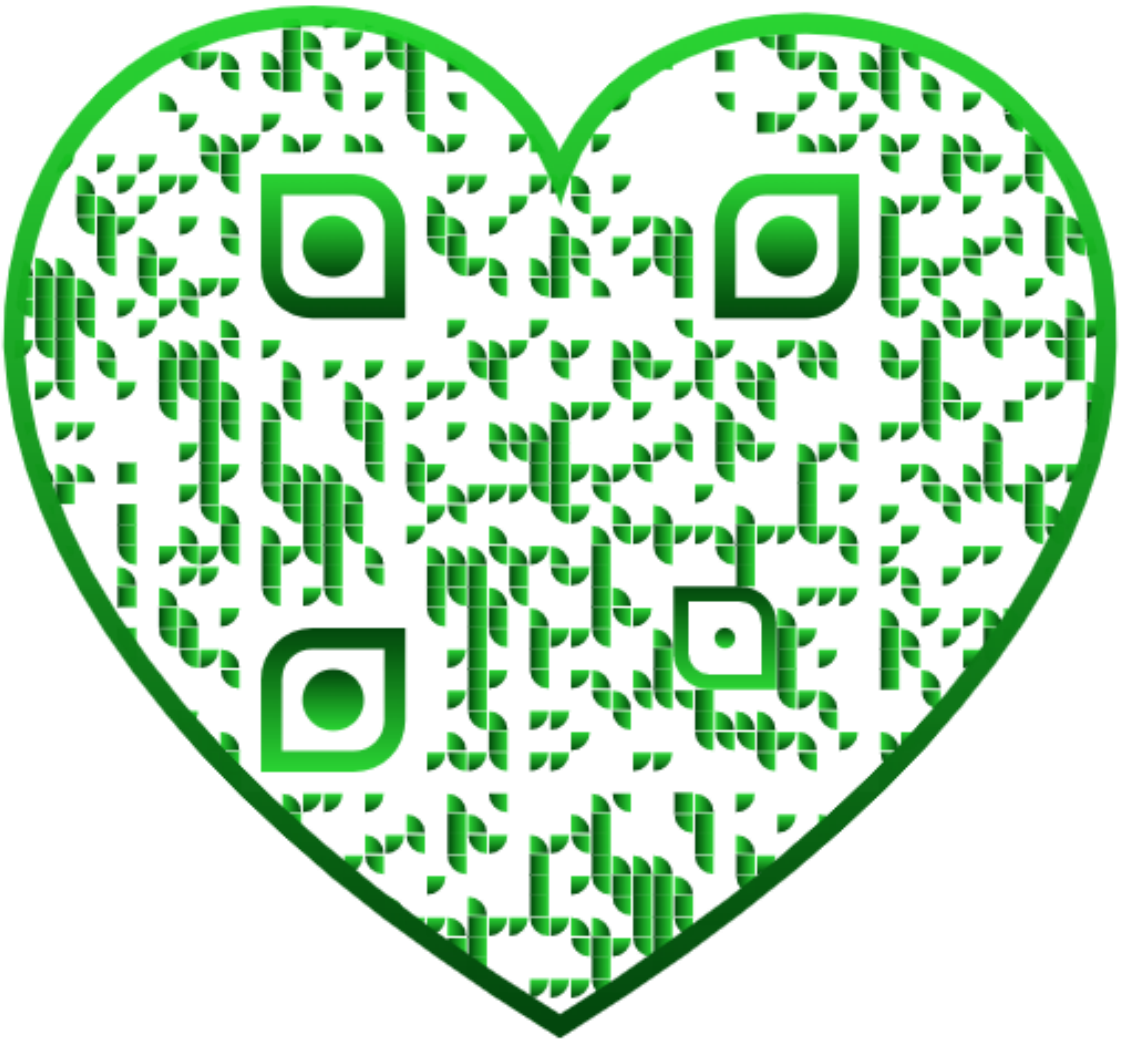
at the end point the color change from colorless to pink

3. At third end point is very weak , so no is available for direct titration

❖ Procedure :-

➢ Frist with Ph.ph

1. Fill up the burette with standard NaOH (0.1N)
2. Take 10ml of unknown solution and transfer it to clean conical flask



3. Add 2-3 drops of Ph.Ph indicator
4. Titrate against standard NaOH (0.1N)until end point at which color of indicator change from colorless to pink color
5. Report the titration three times and take the average .

$V_{Initial}$	V_{Final}	**Consumed Volume**

❖ **Calculation**

V_{NaOH} =2/3 H_3PO_4 =…… ml

SO 3/2 V_{NaOH} = all H_3PO_4 ml

$(N.V)_{H3PO4}$ =$(N.V)_{NaOH}$

X * 10 ml = 0.1 * 3/2 V

N_{H3PO4} = $\frac{0.1 * 3/2\ V}{10ml}$ ……

➢ **Second with M.O**

1. -Fill up the burette with standard NaOH (0.1N)
2. Take 10ml of unknown solution and transfer it to clean conical flask
3. Add 2-3 drops of M.O indicator
4. Titrate against standard NaOH (0.1N)until end point at which color of indicator change from colorless to pink

❖ **Calculation**

V_{NaOH} =1/3 H_3PO_4 =…… ml

SO 3/1 V_{NaOH} = all H_3PO_4 ml

$(N.V)_{H3PO4}$ =$(N.V)_{NaOH}$

X * 10 ml = 0.1 * 3/2 V

N_{H3PO4} = $\frac{0.1 * 3\ V}{10ml}$ ……